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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

AFTERGUT, JEFF H

ART UNIT PAPER NUMBER

1733

DATE MAILED: 08/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/039,574

Applicant(s)

AUTUMN, KELLAR

Examiner

Jeff H. Aftergut

Art Unit

1733

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 24-29, 36-40 and 51 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 24-29, 36-40 and 51 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3-24-03, 3-5-03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 24-29, 36-40 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over either one of Full et al (US 6,737,160) or Full et al (US 7,011,732).

Either one of Full et al '723 or Full et al '160 suggested that it was known at the time the invention was made to apply a plurality of seta to a beam. More specifically, the references each taught that seta 26a-26d were attached to the end of a beam 202. The beam 202 was the end of a manipulator 200. The beam with the seta so disposed on the end thereof was used to pick up a wafer for example wafer 204 in a micromachine processing system. The reference taught that the seta was manipulated with the beam to produce a preload force by applying the seta to the surface with a perpendicular force. Following the application of the preload force, the seta were manipulated to orient the seta parallel to the surface by moving the seta parallel to the surface of the wafer in order to generate a greater adhesive force. The reference then used the flexible beam to pick up the wafer as the manipulator was operated. The reference failed to expressly state that the preload force applied was between 0.01 –0.1 grams, however one skilled in the art would have determined the desired preload force applied in order to attain the desired adhesive force with the assembly. It should be noted that each discussed the import of the preload force applied to the seta in the adhesive force generation

Art Unit: 1733

operation in detail with reference to Figures 1A-4 of both references. Clearly, one skilled in the art would have provided a beam which was capable of provision of the required preload force in order to facilitate a bond so that the component was capable of being picked up by the manipulator. Additionally, the beam is viewed as a "flexible" beam within the meaning of the term as flexible is deemed to be a relative term and one skilled in the art working on micromachines would have understood that the beam used to pick up the same would have been of a slight dimension (and thus flexible). It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the techniques of either one of Full et al '160 or Full et al '723 to establish an adhesive force adequate to employ the manipulator as a pick and place device for a micromachining operation wherein one skilled in the art would have determined through routine experimentation (the optimum amount) and applied the desired preload force upon the seta in order to facilitate pick up of the components in the process with the flexible beam therein.

Regarding claim 25, note that the reference suggested that the adhesive force was greater than the cumulative force of applying a pulling of the seta. Regarding claims 26-28, note that the references to Full '160 and Full et al '723 both suggested that the optimum angle for detachment was 30 degrees. Regarding claim 29 note that both references suggested that the preload force was produced while the seta were aligned parallel with the surface. Regarding claims 36-38, the references to Full et al '723 and Full et al '160 suggested that those skilled in the art would have employed artificially manufactured seta in the operation of establishing an adhesive force wherein

Art Unit: 1733

the artificial seta would have been protrusions within the meaning of the claims.

Additionally both of Full et al '160 and Full et al 723 suggested that one skilled in the art would have pulled the seta along the surface with a velocity to increase the adhesive force generated by the seta and/or protrusions. Regarding claim 39, note that the references suggested the use of the manipulator to pick up a wafer. While a wafer was deemed to be a substantially planar substrate one skilled in the art would have understood that the processing of the references would have been useful for the pick up of non-planar objects as well such as cylinders and shafts and there is simply no reason to believe that the manipulator described would not have been capable of pick up of such objects (as a function of the manufacturing be performed and the need to move the various minute components). Regarding claim 51, note that the prior art suggested that those skilled in the art would have employed plural seta on the manipulators therein wherein the seta were joined to the beam at one end. Additionally note that the references suggested that those skilled in the art would have utilized artificial seta in the processing (protrusions).

Response to Arguments

3. Applicant's arguments with respect to claims 24-29, 36-40 and 51 have been considered but are moot in view of the new ground(s) of rejection.

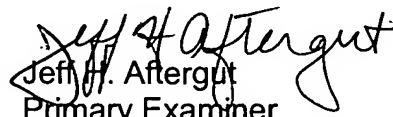
Art Unit: 1733

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff H. Aftergut whose telephone number is 571-272-1212. The examiner can normally be reached on Monday-Friday 7:15-345 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on 571-272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Jeff H. Aftergut
Primary Examiner
Art Unit 1733

JHA
August 9, 2006